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The brass plate, represented in fig. 8, is used when the apparatus is employed in the treatment of fractures of the thigh, compound fractures of the leg, compound dislocations of the ancle, and injuries of the knee; but is not required in the treatment of simple fractures of the leg, or in simple dislocations of the ancle.

The pelvis strap, seen in fig. 3, *b b*, with its sliding pad *c c*, is employed in the treatment of all those cases which require the use of the sliding brass plate (fig. 8), and serves to connect the apparatus to the pelvis.

The surgeon having padded the apparatus, regulates its application; and also the application of the short splints, according to the situation and nature of the injury.

N° VI.

CAP FOR FRACTURED OR DISLOCATED PATELLA.

The SILVER VULCAN MEDAL *and* TEN GUINEAS *were this Session presented to Mr.* W. RAYNES, *of Regent Street, Westminster, for his* CAP FOR FRACTURED OR DISLOCATED PATELLA, *which has been placed in the Society's Repository.*

WHEN the patella is broken across, the fractured portions recede, in consequence of the contractile action of the powerful ligaments to which this bone is attached. The intention of one of Mr. Raynes's instruments is to counteract this tendency to recede, and, by keeping the broken surfaces in apposition, to facilitate and expedite their union.

The other instrument invented by Mr. Raynes is for giving relief in cases of dislocated patella.

The Society are well aware that instruments of the above description would come before the public with higher claims to notice under the sanction of strictly professional recommendation. The reward which they bestowed on the ingenious artist was, however, given with the concurrence of several surgeons who stand high in public estimation, and they trust that the instruments will be found of use to those who may have occasion to make trial of them.

Reference to the Engraving of Mr. WILLIAM RAYNES's *Instruments, or Spring Bandages, for dislocated and fractured Patella.*

Plate XII.—Fig. 1 is an outside view of the right knee, with a double-spring bandage applied to it, in a case of fractured patella.

Fig. 2 is a view of the outside of the bandage represented as stretched out.

Fig. 3 is a similar view to fig. 2 of the side plate, springs, &c. without the bandages or padding.

Fig. 4 is a similar view to fig. 1 of the steel side plate, springs, &c. without the bandages.

The same letters refer to the same parts in each figure.

Fig. 5 is a front view of the knee, together with the side plates *a* and *b*, showing the manner in which they are bent, to fit the sides of the knee before the bandages are fixed to them.

The upper and lower side plates, *a* and *b*, are fixed together by a joint, and are at liberty to turn in the direction of the knee 90°; the lower, or joint ends of the upper side plates have two circular grooves *c c*, 90° each, to the hole in the centre of the joint, as shown in fig. 6.

The upper ends of the side plates are connected together by a thin spring *d* (bent so as to fit the back part of the thigh), the upper edge of which is shown in fig. 7.

Fig. 8 is a front or edge view of the upper side plates *a a*, together with the springs *e e*, which are fixed by two screws to the outer side of the side plates—see figs. 3 and 4.

To the upper, or joint, ends of the lower side plates *b b*, are fixed two studs *f f* and *g g* (see figs. 9 and 10, which are a side and edge view), which act in the grooves *c c*, in the joints of the upper side plates *a a;* and also limit the extent of the action of the joint. The lower ends of the side plates *b b* are connected together by a thin spring *h*, which is bent so as to fit and clip one half of the back part of the leg, see fig. 11, which is a view of the under edge of the spring *h*.

To the inner sides of the joints of the side plates are fixed the ends of another thin spring *i*, bent so as to fit the ham (see figs. 12 and 13, which are an edge and side view); its ends are connected to the side plates by means of the joint or centre pins, which pass also through the upper and lower side plates, and are secured on each side. The upper and lower side plates, and also the spring or ham plate *i*, are at liberty to turn on the joint pins, independently of each other. The centres of the joints of the side plates must be placed so as to coincide with the centre of motion of the knee.

The elevating springs *e e*, which are fixed to the upper side plates, act on the studs *g g* (which project also on the outside of the joint of the lower side plate), and tend to assist the muscles in straightening the knee.

The bent springs *d*, *i*, and *h*, which clip the back part of the thigh, &c. are covered with thin leather, and firmly sewed to their respective bandages (see figs. 1 and 2); the insides of the bandages are made of soft doe, or sheep, leather, and the external sides may be covered with morocco leather, jane, or canvas, as required; to the ends of the bandages are stitched buckles and straps, as being the most convenient mode of adjusting, or of doing and undoing. The bandages may be secured by lacing, but in that case more time will be required.

To the outside of the middle bandage, and at the end *j*, is stitched a piece of leather, with a hole in the middle to receive the patella, or cap of the knee (it also forms the ends of the straps); the internal part of the bandage under the hole at *j* is made concave, to receive the patella of the knee; *k k* are two elastic springs, which consist each of two helical springs inclosed in a piece of thin kid leather, the leather is of sufficient length to receive the spring when extended, but when the spring is contracted the leather is contracted also; the lower ends of the springs are stitched fast to the outside of the middle bandage at *j*, and the upper ends are made fast to a small pad, the shape of which is represented by a dotted line at *l;* the pad is fixed to the under side of the upper bandage by means of a narrow piece of soft leather (as represented by the dotted lines at *m)* which passes beneath the springs and is firmly stitched to the under side of the bandage. The use of the springs *k k* is to prevent the upper part of the fractured patella from slipping up out of its place when the knee is bent.

Fig. 14, is an inside view of the left knee, with a single-spring bandage applied to it, as in a case of dislocated patella.

Fig. 15 is an outside view of the bandage, &c. represented as stretched out. This instrument differs but little in principle, but is more simple than the one already described.

Only one set of side plates, or elevating springs is used, the spring *n*, which is fixed to the upper side plate, projects each way, and is bent so as to fit the side of the thigh.

Fig. 16 is a side view.

Fig. 17 a front or edge view, and

Fig. 18 a view of the upper edge of the spring *n*, which clips the side of the thigh. The spring at the bottom part of the lower side plate is bent so as to clip the side of the leg.

Fig. 19 is a side view.

Fig. 20 a front, or edge view, and

Fig. 21 a view of the upper edge of the spring *o*, which clips the inside of the leg; the joint and elevating spring *e* is similar to the one above described.

Fig. 22 is a side, and

Fig. 23 an edge view of the elevating spring *e*; no spring is applied to the side plates to go beneath the ham, as in the former instrument; but there is a spring plate *p*, one end of which is fixed to the inside of the joint of the side plates, and is at liberty to turn either way, independent of the side plates; the other end of the spring is made broad, and has a hole *q*, to receive the patella; the spring *p* is bent from the joint of the side plates over the top of the patella, and is made concave so as to rest easy upon the knee.

Fig. 24 is a view of the upper edge, and

Fig. 25 is a side view of the spring *p*; there is a number of small holes made round each end of it to secure it to the bandage. The bandages are fitted up in a similar way to the former instrument. When the instrument is properly fitted and adjusted to the knee, the action of the spring *p* prevents the patella from sliding out of its place.